

10/552262

119

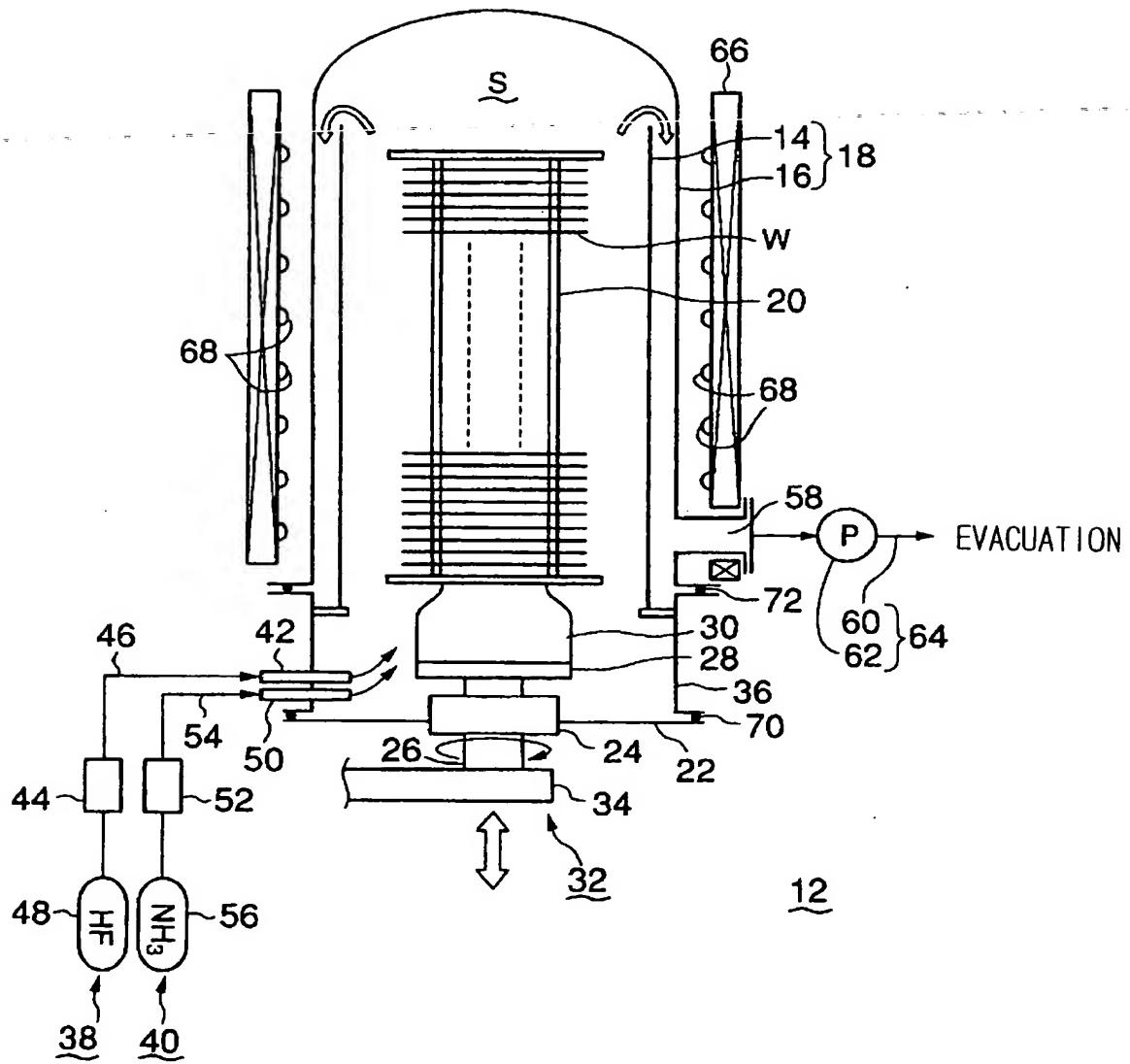


FIG. I

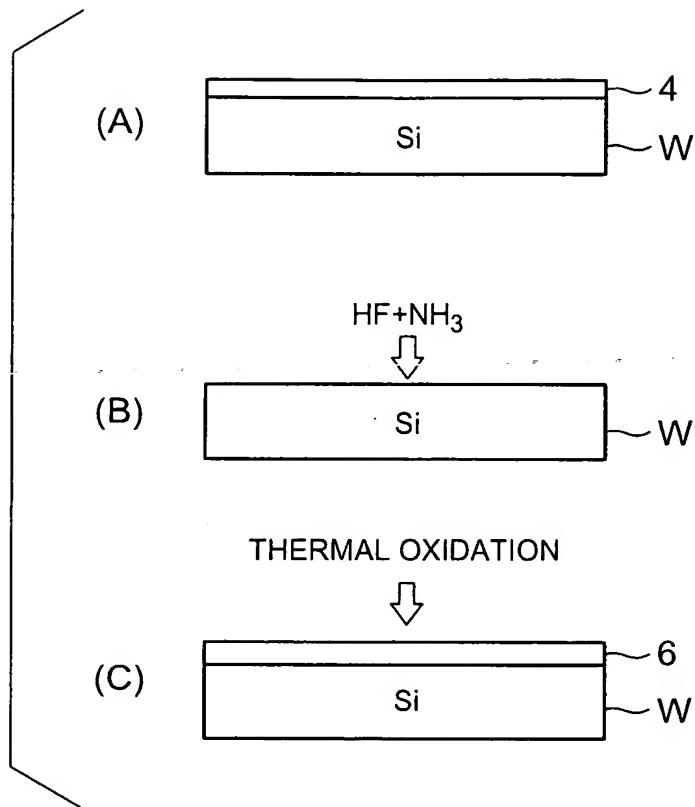


FIG. 2

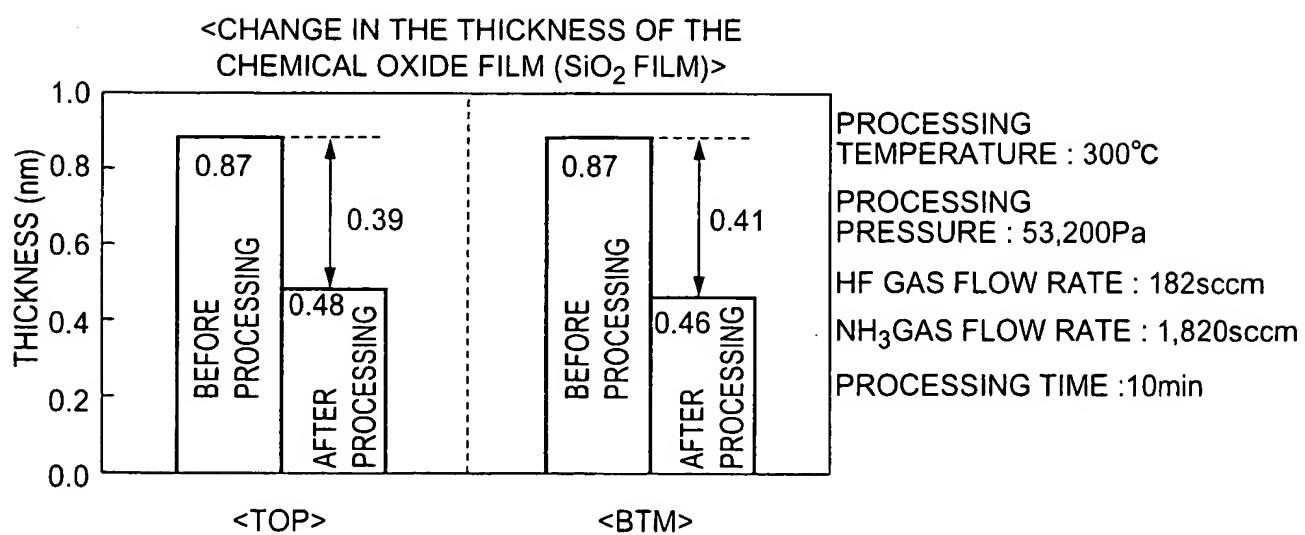


FIG. 3

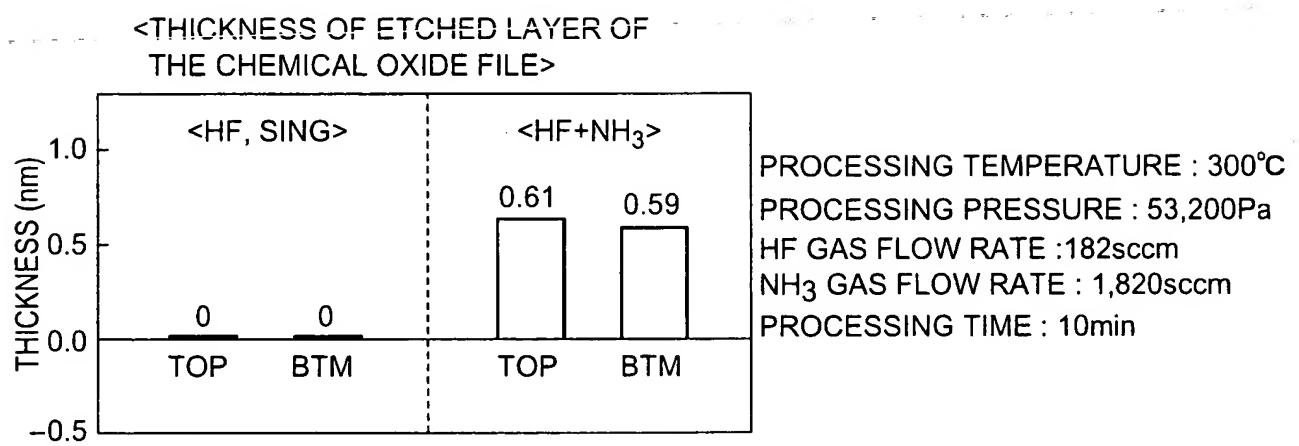


FIG. 4

10/552262

4/9

<ETCH SELECTIVITY FOR CHEMICAL OXIDE FILM>

| TEMPERATURE °C | PRESSURE Torr | HF sccm | NH ₃ sccm | CHEMICAL OXIDE FILM nm | POLYSILICON FILM nm | SiN nm | TEOS (SiO ₂) nm | THERMAL OXIDE FILM (SiO ₂) nm |
|-------------------|------------------|------------|-------------------------|------------------------------|---------------------------|-----------|--------------------------------|--|
| 100 | VAC | 182 | 1820 | 0.16 | 0 | 0 | 0.23 | 0.79 |
| | 7.6 | 1820 | 182 | 0 | 0 | 6.20 | 15.37 | 12.52 |
| | 400 | 1000 | 1000 | 0 | 1.29 | 16.61 | 35.07 | 40.78 |
| | VAC | 1820 | 182 | 0 | 0 | 0.14 | 0.53 | 0.08 |
| | 7.6 | 1000 | 1000 | 0.12 | 0 | 0 | 0 | 0 |
| | 150 | 182 | 1820 | 0.22 | 0 | 0 | 0.26 | 0.37 |
| 300 | VAC | 182 | 1820 | 0.42 | 0 | 0 | 0.61 | 1.19 |
| | 400 | 1000 | 1000 | 0.58 | 0 | 0 | 1.99 | 11.02 |
| | 400 | 1820 | 182 | 0.61 | 0 | 0 | 3.22 | 93.90 |
| | VAC | 1000 | 1000 | 0.16 | 0.04 | 0 | 0.01 | 0 |
| | 7.6 | 182 | 1820 | 0.10 | 0 | 0 | 0.03 | 0 |
| | 400 | 1820 | 182 | 0.35 | 0 | 0 | 5.42 | 0.55 |
| 600 | VAC | 1000 | 1000 | 0.18 | 1.35 | 0.08 | 0 | 0.57 |
| | 7.6 | 182 | 1820 | 0.10 | 0.40 | 0.10 | 0.40 | 0.02 |
| | 400 | 1820 | 182 | — | — | 12.43 | 0 | 8.62 |

<1Torr=133Pa>

FIG. 5

10/552262

5/9

| | TEMPERATURE | PRESSURE | TIME | HF | NH ₃ | POLYSILICON FILM | | SiN | | TEOS | | THERMAL OXIDE FILM | | CHEMICAL OXIDE FILM | |
|--------------------------|-------------|----------|------|--------|-----------------|---------------------|------|------|------|------|-------|-----------------------|------|------------------------|------|
| | °C | Torr | min | (sccm) | (sccm) | TOP | BTM | TOP | BTM | TOP | BTM | TOP | BTM | TOP | BTM |
| HF:NH ₃ =1:10 | 200 | 150 | 10 | 182 | 1820 | 0 | 0 | 0.58 | 0.63 | 9.04 | 24.07 | 0.90 | 2.03 | 0.57 | 0.56 |
| HF:NH ₃ =1:20 | 200 | 150 | 10 | 91 | 1820 | 0 | 0 | 0.12 | 0.15 | 3.22 | 8.50 | 0.14 | 0.25 | 0.56 | 0.57 |
| HF:NH ₃ =1:50 | 200 | 150 | 10 | 36 | 1820 | 0.03 | 0.09 | 0.03 | 0.04 | 2.02 | 2.19 | 0.07 | 0.08 | 0.41 | 0.47 |

FIG. 6

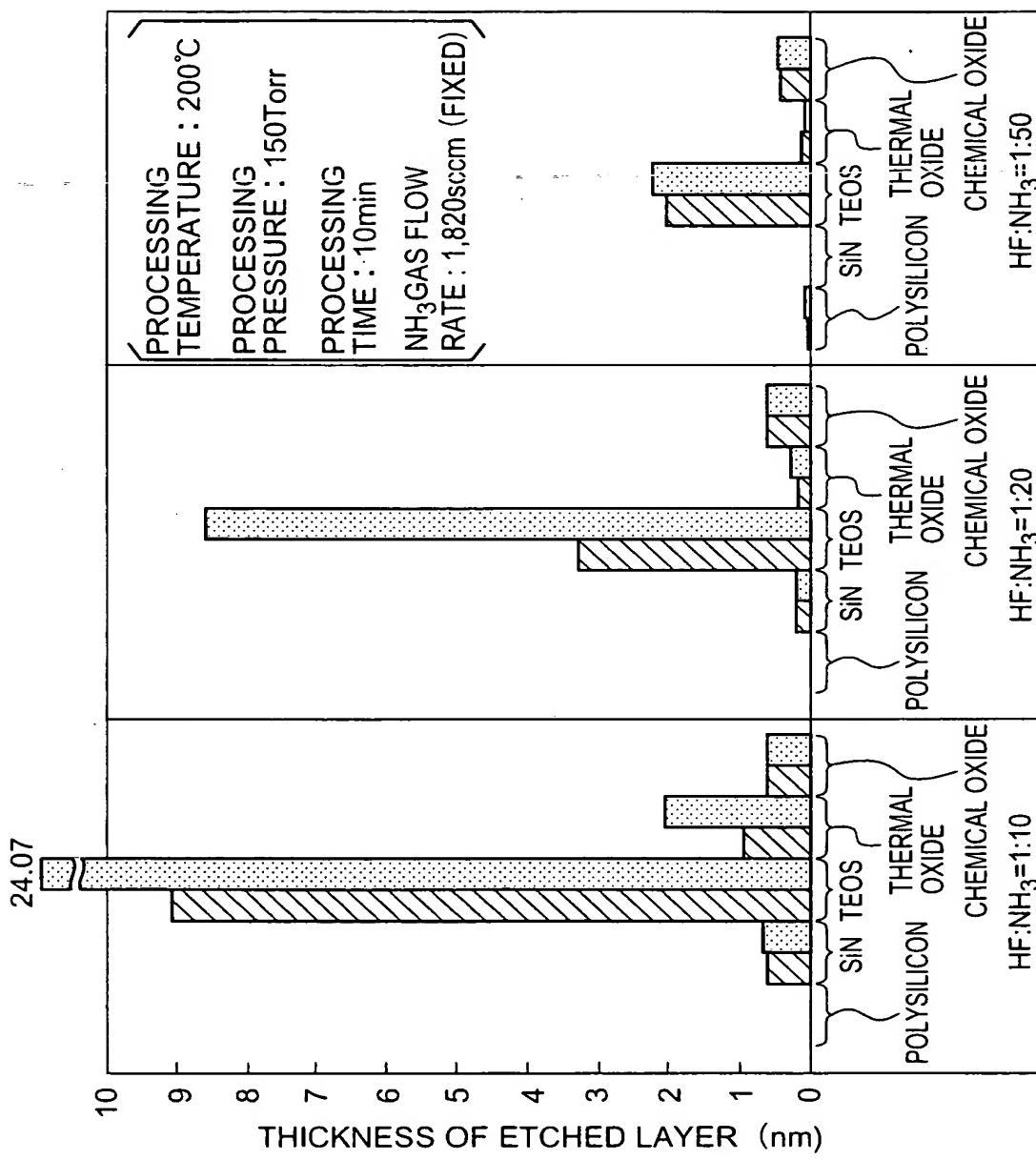


FIG. 7

7/9

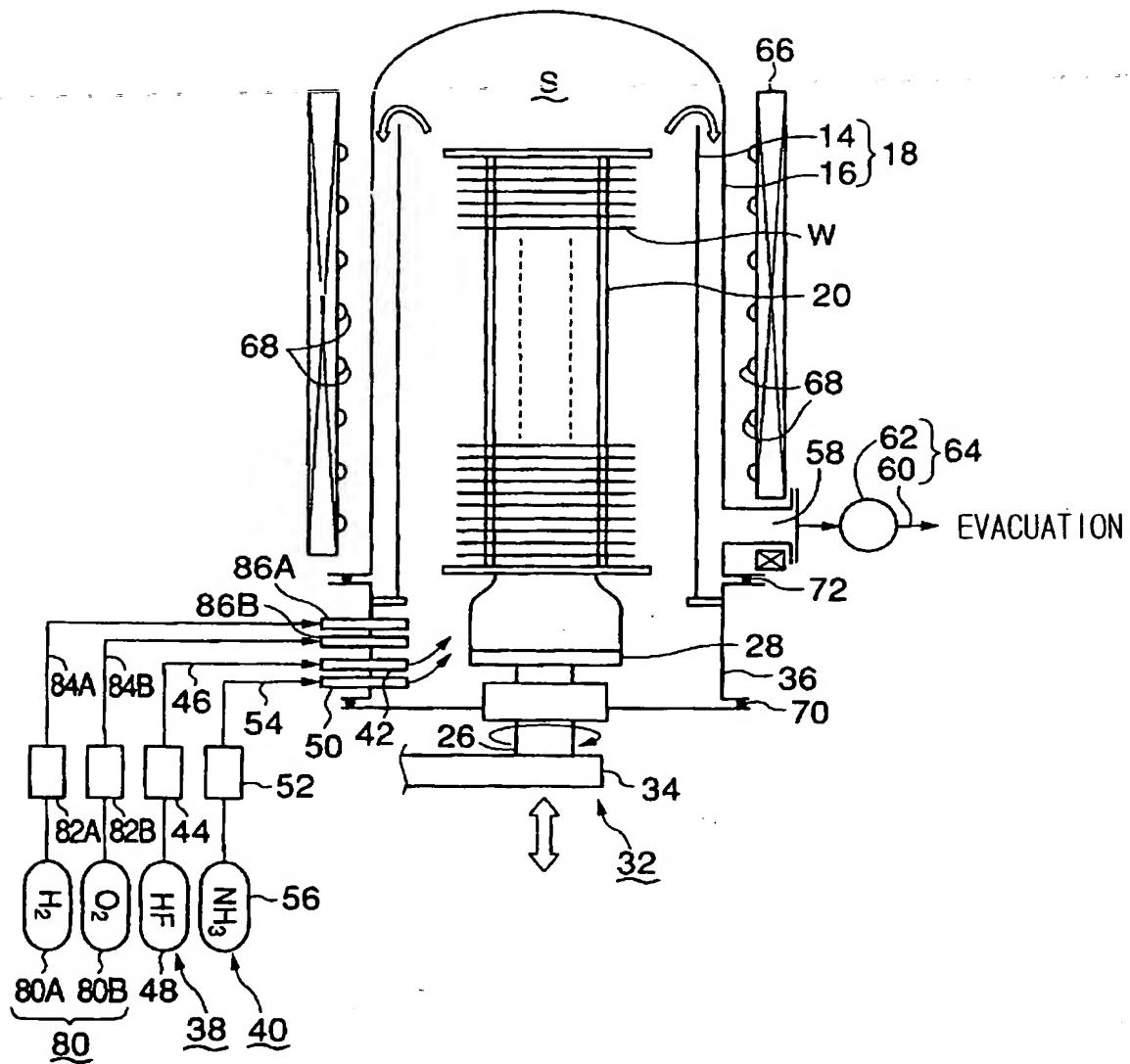


FIG. 8

10/552262

8/9

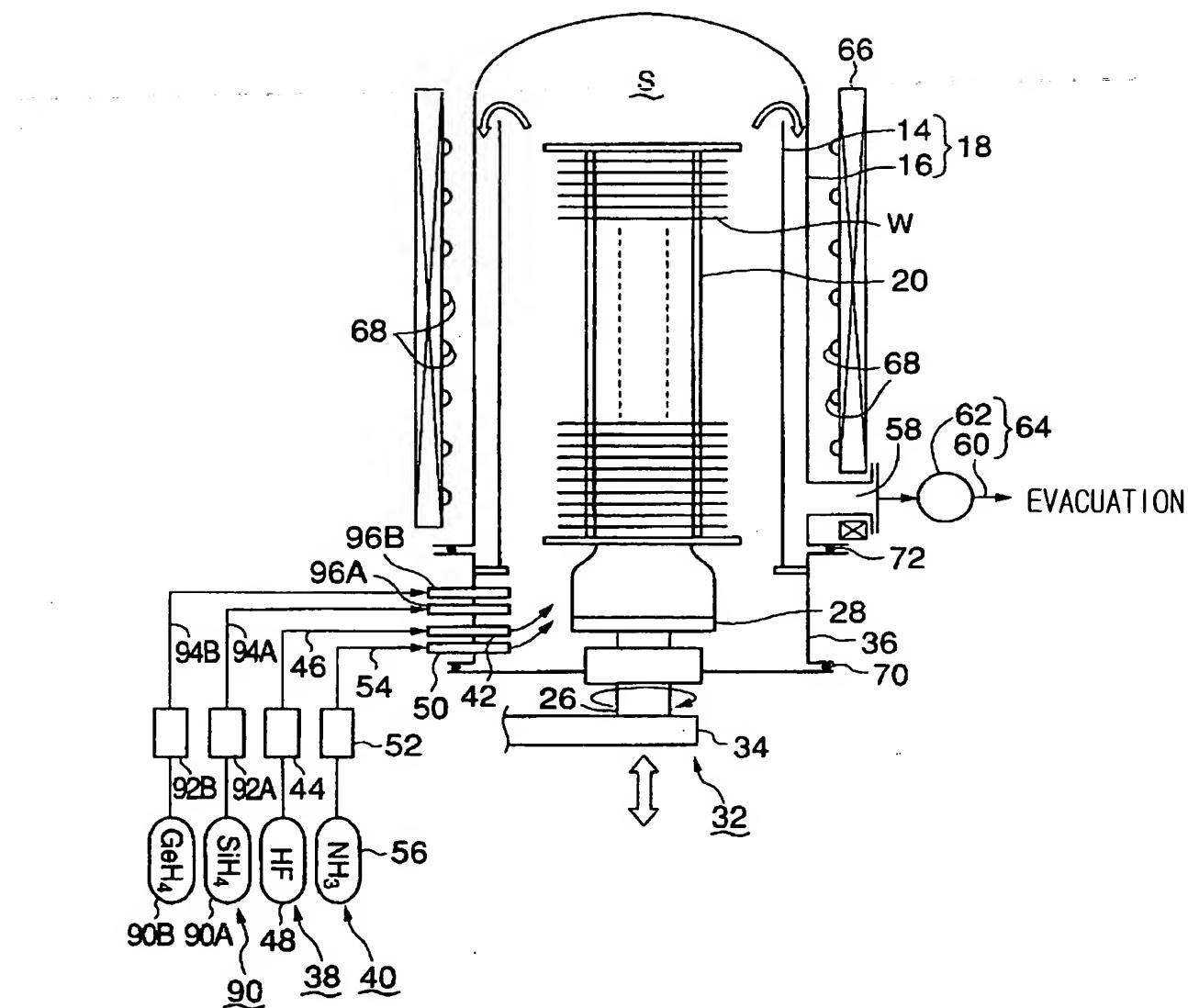


FIG. 9

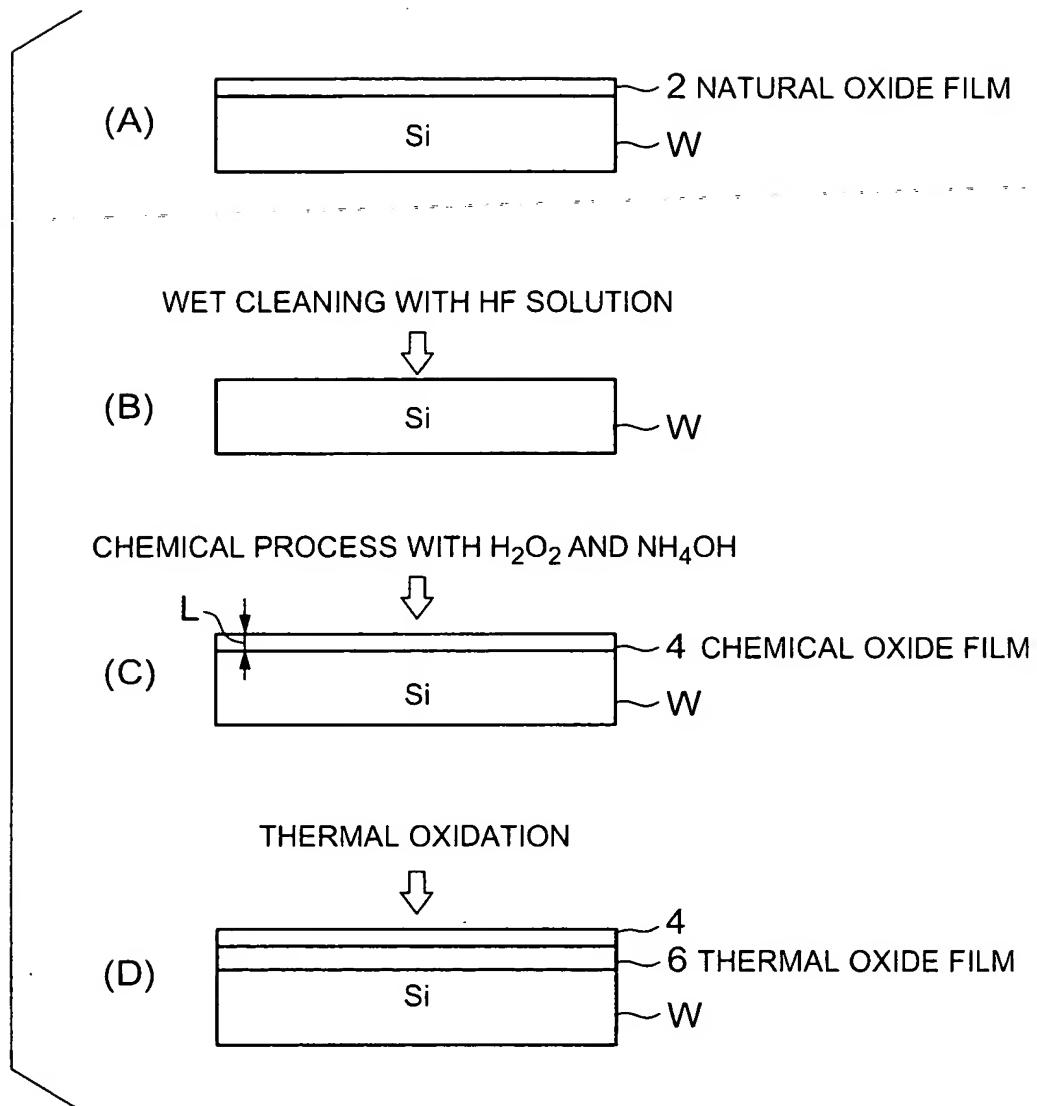


FIG. 10